

# EFFECTIVENESS OF CUPPING THERAPY AND ABDOMINAL STRETCHING EXERCISE TO DECREASE MENSTRUAL PAIN IN ADOLESCENTS LIVING IN SEDATI SIDOARJO

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## ABSTRACT

Almost all women in the world have experienced menstrual pain or dysmenorrhea. Its incidence rate ranges from 45-95 % among women at productive age at various levels, ranging from very painful sores around the pelvis and inside parts to menstrual pain, which forces women to take a rest or results in the reduction of performance quality and daily activities. Even, some women get unconscious (fainted) because they cannot cope with the pain (Manuaba, et al., 2009; Proverawati & Misaroh, 2009). Menstrual pain management can be done in two ways: non-pharmacological and pharmacological therapy. Pharmacological therapy is the administration of non-steroidal anti-inflammatory drugs (NSAID), traditional herbal drinks, whereas non-pharmacological therapy which can reduce pain includes skin massage, diathermy, immobilization, distraction, transcutaneous electrical nerve stimulation (TENS), guided imagery, feedback, relaxation technique with abdominal stretching exercise, and cupping therapy (Tamsuri 2006 ; Sharaf , 2012). The general purpose of this study was to analyze the effectiveness of cupping therapy and abdominal stretching exercise on the level of menstrual pain in adolescents living in Pepe Village, Sedati Sidoarjo. This study used pre-experimental design. The population involved adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo who experienced menstrual pain, totaling 32 people chosen using total sampling technique. Data Analysis was done using a computer program using Wilcoxon Signed Rank test with  $\alpha = 0.05$ .

The results obtained using Wilcoxon signed rank test showed the effects of cupping therapy on the level of menstrual pain in adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo. Whilst, the statistical test using Wilcoxon signed rank test showed the effectiveness of abdominal stretching exercise to decrease menstrual pain in adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo.

**Key words:** Cupping therapy, abdominal Stretching, Exercise, menstrual pain

## INTRODUCTION

Every woman experiences different menstrual period. Some women may have period without complaints, but many of them have period accompanied with pain in lower abdomen and back heels called dysmenorrhea. The pain begins at the onset of menstruation and reaches its peak as the large amount of menstrual blood flows during the first to the second day of menstrual period (Hockenberry et al, 2008)

At the time of the endometrial lining sheds, endometrium releases prostaglandins (group of compounds similar to strong hormone consisting of essential fatty acids), the increase in the prostaglandin hormone stimulates the muscles of the uterus (womb) and affects the blood vessels that cause ischemia of the uterus (reduction of blood supply to the uterus) through the contraction of the myometrium (muscle wall of the uterus) and vasoconstriction (narrowing of blood vessels), which results in the onset of menstrual pain (Anurogo, 2011).

Almost all women in the world have experienced painful menstruation or dysmenorrhea. The incidence rate of menstrual pain ranges from 45-95% among women of productive age with a variety of levels, ranging from severe painful sores in **around the pelvis and its inside parts**. Menstrual pain forces women to take a rest or results in the reduction of performance quality and daily activities. Even, some women get unconscious (fainted) (Manuaba,dkk., 2009; Proverawati & Misaroh, 2009). The primary menstrual pain affects the quality of life for 40-90% of women, in which 1 of 13 women who experiences menstrual pain cannot not attend work and school for 1-3 days per month (Woo and McEneaney, 2010). In the United States, the economic losses up to 2 billion and reduced work productivity happen due to the loss of work hours up to 600 million work hours as a result of dysmenorrhea (Zhu X et al, 2009).

Dysmenorrhea often encourages patients to check or consult a doctor, public health center/clinic, or midwife. Even, some women become dependent on the consumption of analgesics/anti-pain drugs during dysmenorrhea. In general, 50-60% of women require analgesics to overcome the problem of menstrual pain (Annathayakheisha, 2009).

Menstrual pain management can be done in two ways: non-pharmacological and pharmacological therapy. Pharmacological therapy is the administration of non-steroidal anti-inflammatory drugs (NSAID), traditional herbal drinks, whereas non-pharmacological therapy which can reduce pain includes skin massage, diathermy, immobilization, distraction, transcutaneous electrical nerve stimulation (TENS), guided imagery, feedback, relaxation with

abdominal stretching exercise, and cupping therapy (Tamsuri 2006; Sharaf, 2012). Treatments with non-pharmacological therapy have no side effects at all compared to pharmacological treatments with drugs such as non-steroidal analgesics and steroids that have harmful side effects on the stomach and kidneys (Sharaf, 2012). Among various non-pharmacological therapy, cupping therapy and abdominal stretching exercise can be an alternative solution to overcome dysmenorrhea.

Cupping therapy is a non-pharmacological therapy that can treat painful menstrual pain. This therapy reduces the level of prostaglandins to reduce uterine contractions and sensitivity to pain. Cupping therapy can increase endorphin and enkephalin production and can stimulate blood circulation in the uterus to reduce uterine contractions and sensitivity to pain. (Sharaf, 2012)

According to Senior (2008), by doing exercise, the body will produce endorphin hormone. This hormone is produced in the brain and spinal nervous system. It serves as a natural tranquilizer, causing a sense of comfort. When doing exercise, endorphin hormone increases four to five times in the blood. Thus The more physical exercise, the higher the level of endorphin. When doing physical exercise, endorphin is produced and captured by receptors in the hypothalamus and the limbic system which serves to regulate emotions (causing relaxation and comfort). Evidences show that the increase of endorphin results in a decrease in pain, as well as normalization of blood pressure and breathing. Based on those considerations, the researchers are interested in examining the effectiveness of cupping therapy and abdominal stretching exercise for decreasing menstrual pain level in Pepe Village, Sedati, Sidoarjo.

## RESEARCH METHOD

This quantitative research used pre-experiment design with one-group pre-post test design. The purpose of this study was to determine the effectiveness of cupping therapy **luncur** and abdominal stretching exercise to decrease menstrual pain in adolescents. The population in this study involved all adolescents (aged 10-19 years) who experienced menstrual pain, totaling 32 respondents.

The respondent's pain level was measured before and after the treatment by providing observation sheets for pain measurement using a numeric pain intensity scale (NRS) 0-10. During the first cycle of menstruation, the researchers implemented cupping therapy for 15-30 minutes by using appropriate equipment standardized by ABI (Indonesian Cupping Therapy Association) when the respondents experienced menstrual pain. Then, in the next cycle, the respondents did abdominal stretching exercise for 10 minutes, guided by the researchers using the same SOP (Standard Operating Procedure) The data were analyzed with SPSS 20 using Wilcoxon Signed Rank test with  $\alpha = 0.05$ .

## RESULTS AND DISCUSSION

### 1. CUPPING THERAPY

Menstrual pain level before receiving cupping therapy

Results of research on the characteristics based on the level of menstrual pain before receiving cupping therapy were obtained as shown in Table 1 below:

**Table 1 The frequency distribution of the respondents based on the frequency of menstrual pain before receiving cupping therapy in adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo**

Menstrual Pain Levels Before Cupping Therapy	Frequency	Percentage (%)
No Pain(0)		
Mild pain(1-3)	0	0
Moderate pain (4-6)	2	6.3
	7	21.9
Severe pain (7-9)	22	68.7
Very severe pain (10)	1	3.1
Total	32	100

Sources: Primary data, March 2016

Table 1 shows that among 32 respondents, most of them (68.7%) experienced severe menstrual pain before receiving cupping therapy

Menstrual pain felt by the respondents is usually occurred in the lower abdomen and can spread to the inside part of the thigh or lower part of the waist and the back. This situation causes nausea, vomiting, diarrhea, inability to move normally; it even results in unconsciousness or fainting.

According to Morgan and Hamilton (2009), dysmenorrhea occurs as a result of increased endometrial prostaglandins in high quantities. Under the influence of progesterone during the luteal phase of menstruation, endometrium containing prostaglandin increases to the maximum level during menstruation. Prostaglandins cause strong contractions of the myometrium which are able to constrict the blood vessels resulting in ischemia, the disintegration of the endometrium, and pain.

### a. Menstrual pain level after receiving cupping therapy

Results of research on the characteristics based on the level of menstrual pain after receiving cupping therapy were obtained as shown in Table 2 below:

**Table 2 The frequency distribution of the respondents based on the level of menstrual pain after receiving cupping therapy**

Level of Menstrual Pain after Cupping Therapy	Frequency	Percentage (%)
No Pain(0)	16	50,0
Mild pain(1-3)	12	37,5
Moderate pain (4-6)	4	12,5
Severe pain (7-9)	0	0
Very severe pain (10)	0	0
Total	32	100

Sources: Primary data, March 2016

Table 5.2 shows that half (50.0%) of the 32 respondents experienced no menstrual pain after receiving cupping therapy

According to Sharaf (2012), cupping therapy is effective to decrease menstrual pain. It indicates that cupping therapy serves to reduce the level of prostaglandins to reduce uterine contractions and sensitivity to pain. This therapy serves to increase the production of endorphin and enkephalin which reduce pain. It plays its role to stimulate blood circulation in the uterus to reduce uterine contractions and sensitivity to pain. Bruises and blood clots resulted by this therapy stimulate the fibrinolytic system to dilute the menstrual blood clot so that the uterus does not need to contract for the blood discharge. Cupping therapy is helpful to relax the cervical muscles to avoid obstruction in menstrual blood flow and

prevent uterine contractions. Cupping therapy also helps to relax the isthmus region (the part between the cervix and uterus) and stimulates blood circulation in the uterine wall so as to prevent damages to sensitive nerve endings.

### b. Effects of Cupping Therapy on Menstrual Pain Level in adolescents living in RW. 01 Pepe Village, Sedati, Sidoarjo

Results of research on the characteristics based on the effects of cupping therapy on menstrual pain level before and after receiving cupping therapy were obtained as shown in Table 5.3 below:

**Table 3 The distribution of the different levels of menstrual pain before and after receiving cupping therapy in adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo**

Menstrual Pain Level before receiving cupping Therapy	Pre-Test		Post-Test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
No Pain(0)	0	0	16	50,0
Mild pain(1-3)	17	63,3	12	37,5
Moderate pain (4-6)	22	68,7	0	0
Severe pain (7-9)	1	3,1	0	0
Very severe pain (10)				
Total	32	100	32	100

Sources: Primary data, March 2016

Based on Table 3 showing the level of menstrual pain before receiving cupping therapy (pre-test), most of the respondents



(68.7%) experienced severe menstrual pain (7-9); and after receiving cupping therapy (post-test), half of the respondents (50.0%) experienced no menstrual pain (0).

Wilcoxon signed rank test showed the value of  $p = 0.001$  and the value of  $\alpha = 0.05$ , meaning that  $p < \alpha$  so that  $H_0$  was rejected. It described the effects of cupping therapy on the level of menstrual pain in adolescents living in RW 1 Pepe Village, Sedati, Sidoarjo.

Severe menstrual pain occurs due to increased prostaglandins that stimulate strong contractions in the uterus. The longer menstruation happens, the more often the uterine contractions occur. Consequently, when more prostaglandins release due to excessive prostaglandins production, it causes more pain. Menstrual pain management using cupping therapy is very easy, practical, and no side effects, unlike the use of expensive pharmacological treatments which have side effects on the stomach, kidneys and other body organs.

According to Umar (2012), one of non-pharmacological treatments for menstrual pain management is cupping therapy, a method of treatment using tubes or cups which are faced down on the surface of the skin to cause local blocking (damming). This is caused by the negative pressure within in the tubes (cups) to collect blood locally. Then the blood is removed from the skin through suction from injury, purposed to improve energy chi and blood circulation, which causes analgesic effects or reduce pain, reduce swelling, and expel pathogenic wind either cold or humid.

## 2. ABDOMINAL STRETCHING EXERCISE

The results showed that among 15 respondents, an average age of the respondents were 21 years. On average, the first menstrual period occurred at the age of 13.07 years. Most of the respondents (53.3%) experienced menstrual pain for 2 days every month. Based on the history of drug use, most of them (66.7%) took drugs when having menstrual pain.

### a. Menstrual pain levels before performing abdominal stretching exercise

Results of research on the characteristics based on the level of menstrual pain before doing abdominal stretching exercise were obtained as in table 5.4

**Table 4 The frequency distribution of menstrual pain level before doing abdominal stretching exercise in adolescents living in RW 1 Pepe village, Sedati, Sidoarjo**

level of Pain	Frequency	Percentage (%)
No Pain	0	0
Mild pain	7	21,9
Moderate pain	17	53,1
Severe pain	8	25
Very severe pain	0	0
Total	32	100

Sources: Primary data, March 2016

Table 4 showing the frequency distribution of the respondents' level of menstrual pain before doing abdominal stretching exercise, most of them (53.1%) experienced moderate menstrual pain.

Most of the respondents experienced moderate menstrual pain because they have long experiences in having menstrual pain so that the body can adapt and get used to feel the pain every month; and few respondents who are unfamiliar with the pain yet categorized it was in moderate level. In line with Sigit (2010), individuals who are accustomed to pain will be more ready and easier to anticipate the pain compared to those who have little experiences of having pain.

#### **b. Menstrual pain level after doing abdominal stretching exercise**

Results of research on the characteristics based on the level of menstrual pain after doing abdominal stretching exercise were obtained as in tabel 5.

**Table 5 The frequency distribution of the level of menstrual pain after doing abdominal stretching exercise in adolescents living in RW 1 Pepe village, Sedati, Sidoarjo in March 2015.**

level of Pain	Frequency	Percentage (%)
No Pain	4	12,5
Mild pain	15	46,9
Moderate pain	9	28,1
Severe pain	4	12,5
Very severe pain	0	0
Total	32	100

Sources: Primary data, March 2016

Based on Table 5 showing menstrual pain level frequency distribution of the respondents after doing abdominal exercise stretching, almost half of the respondents (46.9%) experienced mild menstrual pain.

Tjokronegoro (2008) states that the physical exercise has the benefit of reducing menstrual pain. First, it increases efficient work of lungs. Someone who regularly does physical exercise can provide oxygen nearly double per minute so that oxygen will be delivered to the blood vessels which experience vasoconstriction and will cause a decrease menstrual pain. Second, it increases the volume of blood flowing throughout the body, including the reproductive organs that facilitate the supply of oxygen to the blood vessels experiencing vasoconstriction. It causes menstrual pain to be reduced. In addition, regular and moderate physical exercise can increase the release of beta endorphin (natural pain relievers) into the bloodstream that can reduce menstrual pain.

#### **c. Effects of abdominal stretching exercise on the levels of menstrual pain in adolescents in RW. 01 Pepe Village, Sedati, Sidoarjo**

Results of research on the characteristics based on the effects of abdominal stretching exercise on menstrual pain level before and after performing abdominal stretching exercise were obtained as showed below.

**Table 5.6 The Frequency distribution of menstrual pain level before and after doing abdominal stretching exercise in adolescents in RW 1 Pepe Village, Sedati, Sidoarjo in March 2015.**

Abdominal stretching exercise	Menstrual Pain Level					Total
	No Pain (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)	
Pre	0 (0)	7 (21,9)	17 (53,1)	8 (25)	0 (0)	32 (100)
Post	4 (12,5)	15 (46,9)	9 (28,1)	4 (12,5)	0 (0)	32 (100)
Uji statistic Wilcoxon signed rank test						
Asymp Sig (2-tailed) = 0,002						
Negative rank = 10						
Positive rank = 0						
Ties = 5						

Sources: Primary data, March 2016

Table 5.6 showed that among 32 respondents before doing abdominal stretching exercise, most of the respondents (53.1%) experienced menstrual pain. After doing abdominal stretching exercise, nearly half of respondents (46.9%) experienced mild menstrual pain. The statistical test using Wilcoxon signed rank test showed that the value of post test was less than the pre test which scored the value of 10. It means that there are 10 respondents experienced the decrease of menstrual pain after doing abdominal stretching exercise. The value of post test was greater than the pre test which scored the value of 0 meaning that there was no respondents who experienced increased level of menstrual pain after doing abdominal stretching exercise. Moreover, the value of pre-test was equal to the value of post test scoring the value of 5 illustrating that as many as five respondents who experienced persistent pain (no change) both before and after doing abdominal stretching exercise. Statistical test results using Wilcoxon signed rank test with significance level  $\alpha = 0.05$  obtained  $P = 0.002$  in which  $P < \alpha$  so that  $H_0$  was rejected. It means that abdominal stretching exercise is effective to decrease the level of menstrual pain in adolescents in RW 1 Pepe Village, Sedati Sidoarjo.

Based on the above data, it can be concluded that abdominal stretching exercise was effective in reducing menstrual pain. Among 32 respondents who performed abdominal stretching exercise, 20 respondents experienced decreased menstrual pain. After abdominal stretching exercise for  $\pm 10$  minutes, the respondents revealed that the movements of the abdominal stretching exercise made the abdominal muscles stretched and caused the body to relax. After doing abdominal stretching exercise respondents felt the pain to subside. Before performing abdominal stretching exercise,

the respondents who initially experienced severe menstrual pain like crumpled pain that makes them unable to move and must take a rest turned into moderate menstrual pain characterized by lighter body and feel stabbing pain, but still be able to move. Whilst, the respondents who experienced menstrual pain before abdominal stretching exercise like being stabbed in the abdomen which interferes with the activity turned to have mild pain, such as sores and twining abdomen that only come a few times and did not interfere with the activities. Moreover, the respondents who experienced mild pain after abdominal stretching exercise did not feel no menstrual pain. The results of research supported by the opinion from Daley (2008) who states that the exercise is effective to reduce menstrual pain.

The benefits of abdominal stretching exercises is to help improve the oxygen or the process of exchange of oxygen and carbohydrates in the cells and stimulates drainage lymph system, so it can improve muscle tone by returning the muscles in length is natural and can maintain its functions properly and improve elasticity or flexibility of body tissues and reduce muscle cramps (Nurhadi, 2007).

## CONCLUSION

Based on the above results it can be concluded that the procedure and abdominal stretching exercise is effective and can be recommended in reducing menstrual pain. However, limitations in this study was not conducted jointly test to determine the most effective therapy in reducing menstrual pain.

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